

ABSTRACT

A magnetic random access memory (MRAM) cell and a memory array formed from the MRAM cells are disclosed. The MRAM cell includes a magnetic tunneling junction and a transistor. The magnetic tunneling junction includes a first ferromagnetic layer, a second ferromagnetic layer and an insulating layer between the first ferromagnetic layer and the second ferromagnetic layer. The gate of the transistor is coupled to a first end of the magnetic tunneling junction. The source of the transistor is coupled to a second end the magnetic tunneling junction. The drain of the transistor is coupled with an output for reading the magnetic memory cell. During reading, a read current is applied to the magnetic tunneling junction and the transistor is preferably operated in a saturation region.